# The Use of a Gluten-Free Diet as Treatment for Hashimoto's Thyroiditis


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## Abstract


Hashimoto's Thyroiditis (HT) is the most prevalent autoimmune disease in humans. The current treatment for HT is thyroid hormone supplementation. However, recent research suggests possible treatment of HT with gluten-free diets. This study found several sources testing this hypothesis. The results showed evidence to support that gluten-free diets are associated with, and cause a reduction in thyroid antibodies. Despite the current evidence, more randomized control trials are needed to increase reliability and validity of these findings.


## Introduction

Hashimoto's Thyroiditis

Pathology/epidemiology

- Most common occurring autoimmune disease in humans (3% of male population, and 13% of female population)
- Most common cause of hypothyroidism
- Lymphocytes and thyroid autoantibodies infiltrate and attack the thyroid gland
- Most common thyroid antibodies are thyroglobulin (Tg-Ab) and thyroid peroxidase (TPO-Ab)

Symptoms of Hypothyroidism

- Chronic fatigue, goiter, depression, weight gain, weakness, cold intolerance, constipation, bradycardia, decreased deep tendon reflexes
- Associated with thyroid lymphoma and papillary thyroid carcinoma

Treatment

- Current treatment includes monitoring lab values, and thyroxine supplementation (synthetic T4) to achieve normal levels of circulating TSH
- Recent research suggests dietary changes, such as gluten-free diets, can be used as treatment by reducing levels of thyroid antibodies

## Methods

Literature Search- Completed in November 2018

Databases used:

- PubMed, EBSCOhost, and GoogleScholar

Search terms:

- "Hashimoto's Thyroiditis" AND "gluten-free diet", "thyroid autoimmunity" AND "diet", "thyroid peroxidase antibody" and "diet", "nonceliac autoimmune disease" AND "gluten-free diet"

Exclusion Criteria

- Articles based only on Celiac Disease (CD), or participants who have CD
- Clinical Studies involving animals
- Studies on different dietary factors such as iodine, Vitamin D, or selenium

Measured Outcomes

- Levels of thyroid antibodies before and after implementing gluten-free diet
- Correlation between lower levels of thyroid antibodies, and gluten-free diets

## Results

The search yielded six valuable studies which showed promising evidence to support the use of a gluten-free diet in the treatment of HT. Four out of the six articles took measurements of thyroid antibodies before and after dietary changes. All four of these studies found a reduction of thyroid antibodies after the patients had eliminated gluten from their diet. The other two articles provided evidence of association between gluten and autoimmune diseases. One of these two studies connected specific gluten-free foods (vegetables, fruits, nuts, etc.) to the presence of lower antibodies in patients (Mantana et al., 2017). The last article reviewed the chemical connections between gluten and multiple autoimmune diseases, and found associations between gluten and HT (Lerner et al., 2017). None of the studies were without weakness such as small sample sizes. However, the overall results are promising.

Table 1. Comparison of Results

| Study | Reduction in TPO-Ab | Reduction in Tg-Ab |
|---|---|---|
| Matana A, Torlak V, Brdar D, et al. | NS | NS |
| Esposito T, Lobaccaro JM, Esposito MG, et al. | S | S |
| Krysiak R, Szkróbka W, Okopień B. | S | S |
| Vojdani A, Perlmutter D. | S | S |
| Dolan K, Finley H, Gasta M, Houseman S. | S | S |
| Lerner A, Shoenfeld Y, Matthias T. | NS | NS |

Key: S= significant ($p<0.05$) NS: not significant, but associations made between gluten-free diet and lower levels of autoantibodies

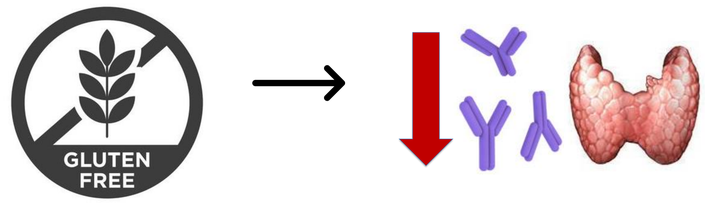
## Discussion

Strengths

- 4/6 studies found HT patients thyroid antibodies **decrease** after eliminating gluten from their diet
- Measurement of antibodies can be considered valid and reliable
- The remaining 2 studies still found **correlation** between gluten-free food, and lower levels of thyroid antibodies

Limitations

- Small sample sizes (ranging from case control studies with 1,850 participants to case reports with only 1 participant) decreases validity
- Lack of randomized control trials
- Limited amount of conducted studies means less reliability of the research
- 2 of the studies found correlation, which does not convey causation
- Some studies population limited to women only




## Conclusion

Hashimoto's thyroiditis affects a massive portion of the population. It is important for health care providers to remain up to date regarding the latest evidence for beneficial medical interventions for HT, and subsequently hypothyroidism. The studies shown in this review provide **positive evidence** that implementing a gluten free diet may lower thyroid antibodies and possibly delay hypothyroidism. However, more randomized control trials with larger sample sizes need to be conducted in the future. This will in-turn raise the reliability and validity of the research, and thus definitively declare gluten-free diets as treatment for Hashimoto's thyroiditis.

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